R18-11-108.03 Narrative Nutrients Standard Implementation Procedures

A. A lake, pond or reservoir shall be free from pollutants in amounts or combinations that cause the excessive growth of algae or aquatic plants that impair an aquatic life, recreational, or domestic water source designated use.

B. The narrative nutrient standard prescribed in subsection A for a lake or reservoir is violated if the mean chlorophyll a result is at or above the upper value in the target range for chlorophyll-a for the lake category prescribed in Table 1.

C. The narrative nutrient standard prescribed in subsection A for a lake or reservoir is violated if the mean blue green algae result is at or above 20,000 per milliliter or the blue green algae count is 50 percent or more of the total algae count and mean chlorophyll a result is within the target range for chlorophyll-a for the lake category prescribed in the table:

D. The narrative nutrient standard is violated if the mean chlorophyll-a result is within the prescribed range for the lake category and there is other evidence of nutrient-related impairments. ADEQ will consider the following factors when applying this weight-of-evidence approach:

1. Exceedances of dissolved oxygen or pH standards;;
2. Fish kills coincident with dissolved oxygen or pH exceedances;
3. Fish kills or other aquatic organism mortality coincident with algal toxicity;
4. Secchi depth is below the lower threshold value for the lake category;
5. Nuisance algal blooms are present in the lacustrine portion of the lake or reservoir;
6. The concentration of total phosphorus, total nitrogen, or TKN exceed the upper value in the range prescribed for the lake category in the above table.

E. The narrative nutrient standard is violated in a shallow lake where the mean depth is less than 4 meters and submerged aquatic vegetation covers more than 50% of the aerial extent of the lake bottom and there is greater than a 5 mg/L swing in diel (24 hour) dissolved oxygen concentration measured within the photic zone.

Comment [sep1]: This is a restatement of the narrative nutrient standard in R18-11-108(A)(6) as applied to lakes and reservoirs.

Comment [sep2]: Implementation procedures for the narrative nutrient standard for lakes, ponds and reservoirs employ several approaches. First, ADEQ will look to the primary response variable, mean chlorophyll a concentration, to determine when the narrative nutrient standard is violated. The narrative standard is violated in a lake, pond or reservoir if the chlorophyll a concentration exceeds the upper value in the range prescribed for the lake classification

Comment [sep3]: In the second approach, ADEQ will look to blue green algae indicators and mean chlorophyll a concentration to determine when the narrative nutrient standard is violated. The narrative standard is violated in a lake, pond or reservoir if the chlorophyll a concentration is within the range prescribed for the lake classification AND the blue green algae count is 20,000 / ml or blue green algae comprise 50% or more of the total algae count.

Comment [sep4]: ADEQ has drafted implementation procedures for how the narrative nutirents standard for lakes and reservoirs will be used in the §305(b) assessment and §303(d) listing processes and will include these in the Impaired Water Rules.

Numeric Targets for Lakes and Reservoirs

Beneficial Use	Lake Category	Chl-*a* (ug/L)	Secchi Depth (m)	Total Phosphorus (ug/L)	Total Nitrogen (mg/L)	Total Kjehldal Nitrogen (TKN) (mg/L)	Blue-Green Algae (per ml)	Blue-Green Algae (% of total count)	Dissolved oxygen (mg/L)	pH (SU)
FBC PBC	Deep	10-15	1.5-2.5	70-90	1.2-1.4	1.0-1.1	20,000			6.5 -9.0
	Shallow	10-15	1.5-2.0	70-90	1.2-1.4	1.0-1.1				
	Igneous	20-30	0.5-1.0	100-125	1.5-1.7	1.2-1.4				
	Sedimentary	20-30	1.5-2.0	100-125	1.5-1.7	1.2-1.4				
	Urban	20-30	0.5-1.0	100-125	1.5-1.7	1.2-1.4				
ALc	All	5-15	1.5-2.0	50-90	1.0-1.4	0.7-1.1		<50	7 (top m)	6.5 -9.0
ALw	All (except urban lakes)	25-40	0.8-1.0	115-140	1.6-1.8	1.3-1.6			6 (top m)	
ALw	Urban	30-50	0.7-1.0	125-160	1.7-1.9	1.4-1.7			6 (top m)	
DWS	All	10-20	0.5-1.5	70-100	1.2-1.5	1.0-1.2	20,000			5.0 -9.0